

A Long-Term Follow-Up Evaluation of an Employment Assistance Reentry Program

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Research Summary

This study uses a quasi-experimental design to evaluate the effectiveness of an employment assistance program implemented in Minnesota prisons by examining recidivism and post-release employment outcomes of 2,814 individuals released between 2009 and 2018. Observable selection bias was reduced by using propensity score matching to create similar treatment and comparison groups. Results of Cox regression analyses showed that completing EMPLOY reduced the hazard ratio for recidivism by 27-66%. The findings further showed that those who completed EMPLOY were more likely to gain post-release employment within two years after release from prison and worked more hours, had higher hourly wages, and earned more total wages during the two-year follow-up period.

Introduction

In response to Martinson's controversial conclusion that "nothing works" for criminal rehabilitation (1974), a large body of research emerged that demonstrated the effectiveness of correctional interventions in reducing recidivism. This "what works" literature led to the development of the risk-needs-responsivity (RNR) model (Andrews et al, 1990; Andrews et al., 2006). The RNR model provides three general principles for effective rehabilitation: that intensive programs should be offered to those most likely to recidivate (risk), that programs must address issues that are related to criminal behavior (needs), and that the type of program must be adapted to the individual's learning style and abilities (responsivity). As part of the "needs" component of the RNR model, scholars have identified eight important criminogenic needs that can be targeted through treatment, including criminal history, criminal thinking, peer relationships, antisocial personality, family relationships, substance abuse, leisure and recreation, and education and employment (Andrews & Bonta, 2010).

Consistent with its status as one of the "big eight" criminogenic needs (Andrews & Bonta, 2010; Andrews et al., 2006), several criminological theories suggest employment can be an important component of desistance from crime. According to social control theory, employment reduces criminal behavior by creating a stake in conformity (Hirschi, 1969; Sampson & Laub, 1993). Social control theorists also acknowledge that participation in work activities can decrease the amount of time that is available to participate in criminal activities, as do opportunity theorists (Cohen & Felson, 1979; Felson & Boba, 2010; Osgood et al., 1996). Social learning theory suggests relationships with prosocial coworkers may help individuals develop prosocial values and thereby change their behavior (Akers, 1998; Sutherland, 1947). In line with strain theory (Merton, 1938), employment can lessen economic need and provide legitimate means to achieve financial

success. Similarly, consistent with rational choice theory (Becker, 1968; Cornish & Clarke, 1986), a reduction in financial need associated with employment can minimize one's financial motivation to participate in crime.

Consistent with these theories, the literature on reentry to the community after release from prison confirms that recidivism is lower among those who find stable, high quality employment (Berg & Huebner, 2010; Horney et al., 1995; La Vigne et al., 2004; Lockwood et al., 2012; Skardhamar & Telle, 2012; Uggen, 2000; Verweij et al., 2021; Visser & Courtney, 2007; Visser et al., 2011). The relationship between employment and desistance is especially salient when individuals work in "career jobs" rather than "survival jobs" (Bucklen & Zajac, 2009; Huiras et al., 2000; Lageson & Uggen, 2013; Niebuhr & Orrick, 2020; Uggen, 1999; Uggen & Staff, 2001).

Despite the importance of obtaining employment soon after release from prison, releasees face difficulty in finding work (Decker et al. 2015; Raphael, 2010; Uggen & Staff, 2001; Visser & Courtney, 2007). Those who have been incarcerated are often not well educated and lack job training and vocational skills (Petersilia, 2003); importantly, many incarcerated people are released with the same educational and vocational deficits that they had when they were incarcerated (Solomon et al., 2004). Even when releasees do not have these deficits, the stigma of a criminal record and the common practice of requiring criminal background checks for employment can make employers loathe to hire the formerly incarcerated (Pager, 2003; Stoll & Bushway, 2008). Failure to obtain employment due to this stigma is likely to increase likelihood of future offending (Needels, 1996). Additionally, releasees often do not have access to social capital, which can be vital for finding employment (Uggen & Staff, 2001; Berg & Huebner, 2011). Among those who do obtain employment after release, many are dissatisfied with their jobs in terms of the pay and the work itself (Visser et al., 2008).

Because employment has been identified as a moderate risk factor for recidivism (Andrews et al., 2006) and because of the common barriers to employment faced by releasees, many corrections agencies have implemented programs that focus on education and vocational training, with evaluations showing some success (see Clark, 2015; Davis et al., 2013; Drake et al., 2009; Duwe, 2015a; Duwe, 2015b; Duwe & Clark, 2014; Duwe & Clark, 2017a; McNeeley, 2018). Relatedly, some studies suggest participation in correctional industries can lower recidivism by improving post-release employment outcomes (Saylor & Gaes, 1992; Duwe & McNeeley, 2020; but for null results see Maguire et al., 1988).

However, several other evaluations of employment-focused rehabilitation programs have found that they did not significantly affect recidivism (Cook et al., 2015; Northcutt Bohmert & Duwe, 2012; Visher et al., 2005). Most notably, both a systematic review of eight evaluations (Visher et al., 2006) and a meta-analysis of five studies (Wilson et al., 2000; Mackenzie, 2012) found no reduction in recidivism among those who participated in programs that target employment needs. A recent review of experimental research on reentry programs that addressed employment concluded they had mixed effects on reentry outcomes, including employment and recidivism, and suggested that the overall link between employment and recidivism may be spurious due to selection into employment by a subgroup of formerly-incarcerated individuals (Muhlhausen, 2015).

Minnesota's Employment Assistance Program

Implemented in 2006, the Minnesota Department of Corrections' (MnDOC) EMPLOY¹ program was designed to help releasees locate and retain employment at a livable wage. EMPLOY is fully funded through MINNCOR Industries. Two to three months before release, participants

¹ EMPLOY is not an acronym but rather is the actual name of the program.

have two eight-hour group sessions with a Job Training Specialist to discuss skills assessments, résumés, job searching techniques, and interviewing skills. The week before participants are released, a Job Development Specialist identifies and contacts potential employers that are in the participant's industry and are located near where the participant will be released. As soon as possible after release, the Job Retention Specialist provides participants with a portfolio that contains copies of their résumé, any certification submitted to EMPLOY, any job leads that were identified, and other resources and tools to assist them with their job search. The Job Retention Specialist maintains contact with each participant and provides continuous support in the form of job leads and résumé maintenance. Participants are given assistance in obtaining interview clothing and supplies needed for their new job. If needed, one-month transit passes are provided to participants who have access to public transportation. The Job Retention Specialist conducts follow-up meetings with each participant one month after their release, then again after three months, six months, and 12 months. After one year, the participant is considered to have completed the program.

To be eligible to participate in EMPLOY, an incarcerated person² must meet the following criteria: (1) have less than five years left in their sentence, (2) have been employed at least six months with MINNCOR Industries (current or former employment)³ or have completed a vocational education program, and (3) have a clean discipline record – those who received any disciplinary segregation in the last year or had any discipline for a rule violation in the final six months of their sentence are placed on a hold status until it can be determined whether they are eligible. Eligible individuals for whom the program would be suitable are referred to the program

² Eligibility for EMPLOY is not limited to those residing in a particular correctional facility.

³ Jobs offered by MINNCOR include assembly, cabinet making, packaging, sewing, printing, laundry, and wood fabrication.

by their case managers; participation is voluntary.

An initial evaluation of EMPLOY, conducted in 2011, found that those who participated in the program had 32-63% lower odds of recidivism (Duwe, 2015b). The study also showed that the odds of gaining post-release employment were 72% higher for EMPLOY participants than for those in the comparison group. While the initial evaluation of EMPLOY showed promising results, it was conducted shortly after the program was implemented. Therefore, it included a relatively small number of program participants – the evaluation included 232 individuals who participated in EMPLOY and only 65 who completed the program – and had a relatively short follow-up period of one to three years.

Indeed, few evaluations of employment programs have included long follow-up periods; rather, most rely on 1-3-year follow-up periods. Those that have included longer follow-up periods have shown either only a modest reduction in recidivism (e.g., Drake et al., 2009) or no effect on recidivism (e.g., Northcutt Bohmert & Duwe, 2012). It is possible that a lack of long-term success could explain the inconclusive results in the literature on the effectiveness of employment programs. Furthermore, program implementation can be challenged over time by issues such as staff turnover, which can affect outcomes (Farabee et al., 1999; Gendreau et al., 1999). Therefore, it is important to continue monitoring the success of correctional programs after obtaining encouraging results from early evaluations. Due to these issues, there is still some uncertainty regarding the continued, long-term effectiveness of the EMPLOY program. Therefore, the current study conducts a follow-up evaluation examining 2-year employment and 2-12-year recidivism outcomes among 1,407 program participants (566 who completed the program) and a matched comparison group.

In addition to the longer follow-up period, another strength of the current study is that it

examines multiple types of recidivism in order to test the effectiveness of EMPLOY (i.e., rearrest, reconviction, reincarceration, and supervised release revocation). Ostermann et al. (2015) confirmed that the operationalization of recidivism can impact the extent to which an evaluation finds support for an intervention. A handful of studies evaluating reentry programs that incorporated employment used multiple forms of recidivism to assess success (e.g., Clark, 2015; Duwe, 2015a; Duwe, 2015b; Duwe & Clark, 2014; Duwe & Clark, 2017a; McNeeley, 2018) and found at least some support for the programs. According to Ostermann et al. (2015), a particular aspect of operationalization that had an impact on results was whether measurement of reimprisonment combined technical parole violations with reimprisonment for new crimes. Prior research on employment assistance reentry programs have sometimes combined these types of reincarceration (e.g., Cook et al., 2015; Davis et al., 2013; Visser et al., 2006). Therefore, this study separately examines reincarceration for a new felony offense and return to prison after a revocation of supervised release conditions.

Research Methods

Data and Sample

This study used a retrospective quasi-experimental design to test whether EMPLOY improved outcomes for recidivism and post-release employment. Specifically, program participants who were released from prison between 2009 and 2018 were compared to a matched comparison group of non-participants released during the same time period. When an individual was released more than once during that period, only their first release was considered. A total of 3,039 individuals who participated in EMPLOY were released between 2009 and 2018. During the same period, there were 2,348 individuals who did not participate in the program but met all the EMPLOY eligibility criteria at the time of their first release. Because pre-incarceration

employment data were not available, the Level of Service Inventory-Revised (LSI-R) education/employment domain score was used as a proxy to control for employment history. However, some incarcerated people (including some EMPLOY participants) did not receive an LSI-R assessment before their release. After excluding those with missing LSI-R data,⁴ there were 4,371 individuals in the sample - 2,636 were EMPLOY participants and 1,735 were eligible for EMPLOY but did not participate.

Dependent Variables

Recidivism. Recidivism was measured in four ways: rearrest, reconviction, reincarceration for a new sentence, and revocation for a technical violation. The first three recidivism variables measure new criminal offenses, while the fourth variable represents a broader measure of rule-breaking behavior. Because the dates of recidivism events were available, these variables include both “status” information regarding whether recidivism occurred and “time” information regarding the number of months between release and the first recidivism event. Recidivism data were collected through December 31, 2020, providing follow-up periods between 2 and 12 years, with an average of about 7 years. Data on arrests and convictions were obtained from the Minnesota Bureau of Criminal Apprehension (BCA), while data on reincarceration and revocation were taken from the Correctional Operations Management System (COMS) database maintained by the MnDOC.

Post-release employment. Information on post-release employment was obtained from unemployment insurance data collected by the Minnesota Department of Employment and

⁴According to Little’s test, the data were not missing completely at random ($\chi^2 = 1042.226$, $p < .001$). Those removed from the sample due to not receiving an LSI-R assessment were less likely to have a high school degree, be released on ISR, participate in treatment, be a DWI or sex offender, while they were more likely to be incarcerated for a release return, committed from the Twin Cities area, drug or person offenders, and released to a community program. They were also younger; had fewer prior felony convictions, supervision failures, and discipline convictions; had shorter incarcerations; and were released more recently.

Economic Development (DEED), which provides information not only on whether individuals were employed after release but also on how much they worked and on their compensation. The employment data are compiled on a quarterly basis; information was not available on the specific date(s) when individuals entered or exited a job. Therefore, the study measured post-release employment for a follow-up period of two years (eight quarters) after an individual's release from prison. Post-release employment during the two-year follow-up period was measured in four ways: any employment (0=no employment, 1=employment), total number of hours worked, average hourly wage, and total wages earned.

Independent Variables

Three binary independent variables relating to program participation were examined. The first treatment variable compares those who participated in EMPLOY (regardless of outcome) to those who did not. The second variable compares individuals who completed EMPLOY or successfully participated until the completion of their sentence with those who did not participate (dropouts are not included in the analyses examining EMPLOY completion). The third variable measures program dropouts by comparing those who quit or were terminated from treatment with those who did not participate (completers are not included in the analyses examining EMPLOY dropout). Appendix A shows descriptive statistics of EMPLOY participants broken down by program outcome.

Control Variables

Several correlates of recidivism identified by previous research were included in the propensity score analysis. Sex is dichotomized as female (1) or male (0). Race is dichotomized as minority (1) or non-Hispanic White (0). Age at release is measured in years as of the time of release. LSI-R score is the total score from the most recent LSI-R assessment before release from

prison. LSI-R education/employment score is the domain score taken from the most recent LSI-R assessment. Prior convictions counts the number of prior felony convictions, excluding the conviction(s) that resulted in the current incarceration. Prior supervision failures measures the number of prior revocations while under community supervision (probation or supervised release). Metro area is a measure of whether the individual was committed to prison from the seven-county Twin Cities metropolitan area (1) or from a county in Greater Minnesota (0). Admission type is dichotomized as new commitment (1) or release return (0). Because visitation is partly a function of sentence length, the total number of visits were divided by the number of months incarcerated to measure the average number of visits per month.

Institutional discipline is measured as the number of convictions for a rule violation received during the term of imprisonment. High school diploma is a binary variable indicating whether an individual earned a high school diploma or general equivalency degree (GED) before release from prison. Other treatment completion is measured with two binary variables that indicate whether the individual completed chemical dependency (CD) or sex offender (SO) treatment before release from prison. Length of stay is the number of months between prison admission and release. Offense type is measured with six binary variables that indicate whether the individual was incarcerated for a (1) person offense (reference group), (2) sex offense, (3) property offense, (4) drug offense, (5) DWI offense, or (6) other type of offense. Release year is included to control for unobserved differences between the different release cohorts from 2009 to 2018. Finally, post-release supervision type is measured with four binary variables indicating whether the individual was released to (1) standard supervision (reference group), (2) intensive supervision, (3) a community program such as work release or the Challenge Incarceration

Program (CIP; see Duwe & Kerschner, 2008), or (4) was discharged with no supervision.⁵

Propensity Score Matching

Propensity score matching (PSM) is a popular method used in program evaluations to help achieve balance between treatment and comparison groups and control for observable selection bias. PSM provides estimates of the conditional probability of selection to a treatment based on observed covariates (Rosenbaum & Rubin, 1985). These estimates – or propensity scores – are generated by estimating a logistic regression model in which the dependent variable is program participation. Then, the propensity scores are used to match individuals who entered treatment with similar individuals who were untreated.

The results of the logistic regression model predicting participation in EMPLOY are presented in Table 1. The variables included in a propensity score estimation model should consist of those related to the outcome that affect treatment selection and are not caused by the treatment (Shadish et al., 2002). Therefore, the covariates included in the model are those that occur before program participation. As shown in Table 1, several covariates were significantly related to whether an individual participated in EMPLOY. EMPLOY program selection was more likely among non-white individuals, females, those with more prior supervision failures, those incarcerated for property offense, those with high school degrees, those committed from the Twin Cities Metropolitan area, those who completed chemical dependency treatment, those who received more visits, and those with later release years. EMPLOY program selection was less likely among younger individuals, those incarcerated for drug offenses, and those who entered prison for new commitments.

⁵ Those who were discharged with no supervision were not included in the analyses predicting supervised release revocation.

Table 1. Logistic Regression Model for EMPLOY Program Selection

<i>Predictor</i>	<i>Predictor Description</i>	<i>b</i>	<i>SE</i>
Minority	Minority=1, Non-Hispanic White=0	0.16**	0.05
Female	Female=1, Male=0	0.44***	0.07
Age	Age in years at time of release from prison	-	0.002
		0.01***	
LSI-R	Most recent LSI-R score before release	0.0003	0.003
LSI-R	Education/employment domain score from most recent LSI-R	-0.01	0.01
education/employment			
Prior convictions	Number of prior felony convictions	-0.001	0.01
Prior supervision failures	Number of prior supervision failures	0.13***	0.02
Sex offense	1=sex offense, 0=not sex offense	-0.03	0.07
Property offense	1=property offense, 0=not property offense	0.20*	0.08
Drug offense	1= drug offense, 0=not drug offense	-0.19**	0.06
DWI offense	1=DWI offense, 0=not DWI offense	-0.05	0.10
Other offense	1=miscellaneous offense type, 0=not miscellaneous	-0.001	0.07
Metro	1=committed from Twin Cities Metro area	0.21***	0.04
New commitment	1=committed for new sentence, 0=release return	-	0.08
		1.07***	
Length of stay	Length of prison stay in months	0.001	0.001
HS/GED	1=HSD/GED at time of release, 0=no HSD/GED	0.53***	0.07
CD treatment	1=completed CD treatment, 0=didn't complete	0.10*	0.05
SO treatment	1=completed SO treatment, 0=didn't complete	-0.07	0.12
Visitation	Monthly rate of visits received	0.02*	0.01
Discipline	Number of convictions for a rule violation	0.02***	0.003
Release year	Year of release	0.07***	0.01
Constant		-144.52	17.11
N		4371	
Log-likelihood		-2593.0203	
Pseudo R ²		0.1169	

***p < .001, **p < .01, *p < .05

After obtaining propensity scores on the 4,371 individuals included in the propensity score model, the study used a “greedy” matching procedure using a without-replacement method in which EMPLOY participants were matched within a caliper (i.e., a range of propensity scores) of 0.01. Matches were obtained for 1,407 individuals who participated in EMPLOY, resulting in a final sample of 2,814. Table 2 presents the degree to which PSM was effective in reducing observable selection bias. The bias measure presented in the table shows the standardized mean difference between the treatment and comparison groups. According to Rosenbaum and Rubin (1985), bias values over 20 are considered unbalanced. Before matching, there were six unbalanced covariates – prior supervision failures, drug offense, Metro county commitment,

Table 2. Propensity Score Matching and Covariate Balance for EMPLOY Participation

<i>Variable</i>	<i>Sample</i>	<i>Treatment Mean</i>	<i>Control Mean</i>	<i>Bias</i>	<i>Bias Reduction</i>	<i>t-test p value</i>
Propensity score	Total	0.66	0.52	84.2		<.001***
	Matched	0.55	0.56	-3.8	95.5%	.234
Minority	Total	0.49	0.43	13.1		<.001***
	Matched	0.43	0.43	-0.9	93.4%	.819
Female	Total	0.14	0.09	14.1		<.001***
	Matched	0.11	0.11	0.9	93.7%	.811
Age	Total	37.37	38.13	-7.5		.014*
	Matched	38.07	37.51	5.5	26.6%	.141
LSI-R	Total	27.47	26.53	11.0		<.001***
	Matched	26.80	26.84	-0.5	95.7%	.900
LSI-R education/ employment	Total	5.23	5.00	8.4		.007**
	Matched	5.06	5.03	0.8	90.5%	.832
Prior convictions	Total	1.53	1.22	12.4		<.001***
	Matched	1.30	1.32	-0.9	92.8%	.796
Prior SFs	Total	1.08	0.55	35.8		<.001***
	Matched	0.63	0.63	-0.1	99.7%	.976
Sex offense	Total	0.12	0.10	5.6		.070
	Matched	0.13	0.11	3.9	31.7%	.323
Property offense	Total	0.14	0.13	4.5		.147
	Matched	0.12	0.13	-1.9	58.2%	.610
Drug offense	Total	0.23	0.33	-		<.001***
	Matched	0.30	0.29	21.5	84.5%	.385
DWI offense	Total	0.07	0.05	7.5		.017*
	Matched	0.05	0.06	-2.1	72.3%	.563
Other offense	Total	0.11	0.10	4.2		.181
	Matched	0.10	0.11	-3.4	17.5%	.353
Metro	Total	0.58	0.47	22.5		<.001***
	Matched	0.48	0.50	-3.7	83.5%	.327
New commitment	Total	0.80	0.96	-		<.001***
	Matched	0.95	0.95	49.8	99.1%	.862
Length of stay	Total	39.98	37.07	6.8		.025*
	Matched	41.57	39.14	5.0	26.5%	.195
HS/GED	Total	0.94	0.85	28.9		<.001***
	Matched	0.90	0.92	-5.3	81.7%	.131
CD treatment	Total	0.29	0.27	4.2		.177
	Matched	0.29	0.30	-3.2	24.3%	.408
SO treatment	Total	0.04	0.03	2.1		.497
	Matched	0.04	0.04	1.1	45.8%	.777
Visitation	Total	1.13	0.93	8.0		.011*
	Matched	0.97	1.01	-2.0	74.3%	.559
Discipline	Total	4.73	2.66	23.0		<.001***
	Matched	3.46	3.05	4.5	80.3%	.116
Release year	Total	2013.8	2013.3	19.8		<.001***
	Matched	2013.4	2013.5	-2.6	86.8%	.485

***p < .001, **p < .01, *p < .05

commitment type, high school degree, and discipline. Table 2 shows that balance between the EMPLOY treatment group and the comparison group was achieved after matching, as all the covariates for the matched sample had bias values well below 20.

Statistical Analysis

Recidivism. Because information on the timing of recidivism events was available, the study used survival analysis to examine recidivism, which allows for an examination of not only whether individuals recidivate, but also how quickly they do so. In particular, the study used Cox regression models, which incorporate both a “status” variable (a dichotomous variable with a value of 1 if the event occurred) and a “time” variable. The “time” variable measured the number of months between the release date and either the date of the first recidivism event or the censor date. The censor date was December 31, 2020 for the analyses predicting rearrest, reconviction, or reincarceration for a new sentence. When examining supervised release revocation, the date the individual was discharged from supervision was used as the censor date if that occurred before December 31, 2020; otherwise, December 31, 2020 was the censor date. To accurately measure the amount of “street time” when individuals were at risk to commit new offenses, the amount of time a person spent in prison for a release violation (in months) was deducted from his or her at-risk period. This deduction was only made when the time spent in prison preceded the recidivism event, or if the individual did not recidivate before December 31, 2020. Differences in coefficients between those who completed EMPLOY and those who participated but did not successfully complete the program were assessed with the z test for equality of coefficients (Paternoster et al., 1998).

Post-release employment. As noted above, the quarterly DEED data do not provide information on the date(s) when individuals entered or exited employment. Because the

employment start date is not available, Cox regression cannot be used. Therefore, logistic regression was used to assess the effect of EMPLOY participation on obtaining employment. Logistic regression assumes the lengths of follow-up periods do not vary across subjects; therefore, the study examined post-release employment outcomes over a follow-up period of two years (eight quarters). Because of the skewed distribution of the measures of total number of hours worked, total wages earned, and hourly wages, generalized linear models (GLM) with a gamma distribution and a log link were used to examine these outcomes.

Results

Bivariate Results

Table 3 presents descriptive statistics comparing EMPLOY participants and individuals in the comparison group for the eight outcome measures. Those who participated in EMPLOY had lower rates of all four types of recidivism, had higher rates of employment, and had higher averages for hours worked, hourly wages, and total wages. Those who completed EMPLOY or successfully participated until the end of their sentence had the best recidivism and employment outcomes. Those who did not successfully complete the program showed improved outcomes for some measures of recidivism (reconviction, reincarceration, and supervised release revocation) and for finding employment, compared to those who did not participate in EMPLOY. However, program dropouts worked fewer hours, had lower hourly wages, and earned less in total wages than the non-participants.

These findings suggest that EMPLOY may have improved recidivism and post-release employment. However, it is possible that the observed differences between those in the EMPLOY and comparison groups could be due to other factors such as post-release supervision or time at risk. Therefore, Cox regression models were estimated for each of the four recidivism measures,

while logistic and GLM models were estimated for the four post-release employment measures. The three variables representing release type were included as controls in these models, with standard supervision serving as the reference group.

Table 3. Recidivism and Employment by EMPLOY Participation

	<i>Comparison Group</i> Mean or %	<i>Entered Program</i> Mean or %	<i>Completed Program</i> Mean or %	<i>Program Dropout</i> Mean or %
<i>Recidivism</i>				
Rearrest	58.1%	55.7%	48.4%	60.6%
Reconviction	31.2%	22.9%	18.9%	25.6%
Reincarceration	20.2%	11.4%	8.5%	13.4%
Revocation	32.4%	22.6%	13.0%	28.7%
<i>Employment</i>				
Employed	62.3%	72.7%	84.3%	64.9%
Hours worked	968.7	1,225.67	1,684.26	915.91
Hourly wages	8.98	10.36	14.28	7.90
Total wages	14,482.61	18,031.01	26,157.17	12,549.01
<i>N</i>	1,407	1,407	566	841

Multivariate Results

Recidivism. Table 4 displays the results of the Cox regression models predicting recidivism. The results show the risk of recidivism was 30% lower for reconviction, 46% lower for reincarceration for a new felony, and 37% lower for supervision release revocation for those who participated in EMPLOY. These benefits were stronger among those who completed EMPLOY; program completers had 27% lower risk of rearrest, 43% lower risk of reconviction, 59% lower risk of reincarceration, and 66% lower risk of supervised release revocation than did non-participants. EMPLOY also reduced the risk of some forms of recidivism among those who did not successfully complete the program; risk of reconviction was 22% lower among dropouts than among non-participants, while risk of reincarceration was 39% lower.

Table 4. Cox Regression Models Predicting Recidivism

	<i>Rearrest</i>	<i>Reconviction</i>	<i>Reincarceration</i>	<i>Revocation</i>
EMPLOY participant	0.91 (0.05)†	0.70 (0.07)***	0.54 (0.10)***	0.63 (0.08)***
ISR	0.71 (0.08)***	0.66 (0.12)***	0.65 (0.15)**	1.43 (0.10)***
Program Release	0.90 (0.06)†	0.91 (0.08)	0.88 (0.11)	1.14 (0.08)
Discharge	0.85 (0.15)	1.02 (0.21)	1.20 (0.27)	---
N	2,814	2,814	2,814	2,717
EMPLOY completer	0.73 (0.07)***	0.57 (0.11)***	0.41 (0.16)***	0.34 (0.13)***
ISR	0.70 (0.10)***	0.65 (0.14)**	0.61 (0.18)**	1.43 (0.12)**
Program Release	0.93 (0.07)	0.84 (0.10)†	0.72 (0.13)*	1.01 (0.10)
Discharge	0.91 (0.18)	1.09 (0.24)	1.29 (0.30)	---
N	1,973	1,973	1,973	1,901
EMPLOY dropout	1.04 (0.06)	0.78 (0.08)**	0.61 (0.11)***	0.86 (0.08)†
ISR	0.72 (0.08)***	0.60 (0.13)***	0.65 (0.16)**	1.45 (0.10)***
Program Release	0.92 (0.07)	0.88 (0.09)	0.81 (0.12)†	1.25 (0.09)*
Discharge	0.76 (0.21)	0.70 (0.31)	0.85 (0.36)	---
N	2,248	2,248	2,248	2,200
$Z_{(\text{completer-dropout})}$	-3.910***	-2.282*	-2.131*	-6.116***

Hazard ratios are presented with standard errors in parentheses.

***p < .001, **p < .01, *p < .05, †p < .10

The table also shows that supervision type was an important predictor of recidivism. Those released on ISR had lower risk of rearrest, reconviction, and reincarceration, but higher risk of supervised release revocation. Those who were released to community programs such as work release or CIP had higher risk of being returned to prison for a supervised release revocation and had lower risk of rearrest, reconviction, and reincarceration in some of the models presented in Table 4.

Post-release employment. The results from the binary logistic regression model predicting employment during the first two years after release from prison, shown in Table 5, reveal that EMPLOY increased the odds of employment. While the odds of employment were higher regardless of program outcome, the results show that completing the program was important for obtaining employment after release. Those who completed the program were 281% more likely to gain employment than those in the comparison group, while program dropouts were 31% more

likely to gain employment than those in the comparison group. The results also show that release type is important for securing employment after release. Compared to those on standard supervision, the odds of employment were higher among those released to ISR or community programs, while the odds of employment were lower among those who were discharged with no supervision.

Table 5. Logistic Regression Models Predicting Employment

	<i>b (SE)</i>	<i>OR</i>
EMPLOY participant	0.60 (0.09)***	1.83
ISR	0.42 (0.12)***	1.52
Program Release	1.50 (0.12)***	4.48
Discharge	-0.47 (0.21)*	0.63
Constant	0.07 (0.07)	1.07
N	2,814	
Model χ^2	246.15***	
Nagelkerke R ²	0.117	
EMPLOY completer	1.34 (0.14)***	3.81
ISR	0.44 (0.15)***	1.55
Program Release	1.46 (0.14)***	4.29
Discharge	-0.95 (0.27)***	0.39
Constant	0.84 (0.07)	1.09
N	1,973	
Model χ^2	257.84***	
Nagelkerke R ²	0.172	
EMPLOY dropout	0.27 (0.10)**	1.31
ISR	0.41 (0.13)***	1.50
Program Release	1.52 (0.13)***	4.57
Discharge	-0.73 (0.30)*	0.48
Constant	0.07 (0.07)	1.08
N	2,248	
Model χ^2	184.67***	
Nagelkerke R ²	0.108	
$Z_{(\text{completer-dropout})}$	6.219***	

Odds ratios are presented with standard errors in parentheses.

***p < .001, **p < .01, *p < .05, †p < .10

Next, Table 6 shows the results of the OLS regression models predicting the other employment outcomes. First, EMPLOY participants worked more hours over the two-year follow-up period than non-participants; this relationship was especially strong for those who completed

the program. Participation in EMPLOY increased the arithmetic mean of hours worked by about 35%,⁶ while program completion increased this by about 79%. Second, EMPLOY helped formerly-incarcerated people find higher-paying jobs, but only when they completed the program. Hourly wages were about 82% higher among those who completed the program than among the comparison group. Third, EMPLOY participants earned a greater amount of total wages. Those who participated in the program earned about 34% more in total wages, while the increase for those who completed the program was around 86%.

Table 6. Generalized Linear Models Predicting Employment Outcomes

	<i>Total Hours</i>	<i>Hourly Wage</i>	<i>Total Wages</i>
EMPLOY participant	0.30 (0.05)***	0.24 (0.12)*	0.29 (0.06)***
ISR	0.32 (0.07)***	0.15 (0.16)	0.20 (0.08)*
Program Release	0.70 (0.06)***	0.49 (0.14)***	0.72 (0.07)***
Discharge	0.14 (0.14)	-0.38 (0.32)	0.17 (0.16)
Constant	6.55 (0.04)***	1.98 (0.10)***	9.27 (0.05)***
N	2,797	2,600	2,809
EMPLOY completer	0.58 (0.07)***	0.60 (0.14)***	0.62 (0.08)***
ISR	0.32 (0.09)***	0.26 (0.19)	0.23 (0.10)*
Program Release	0.72 (0.07)***	0.53 (0.14)***	0.74 (0.08)***
Discharge	0.06 (0.17)	-0.61 (0.35)†	0.08 (0.19)
Constant	6.55 (0.05)***	1.95 (0.10)***	9.25 (0.05)***
N	1,962	1,807	1,970
EMPLOY dropout	0.07 (0.06)	0.01 (0.07)	-0.002 (0.07)
ISR	0.30 (0.09)**	0.24 (0.09)*	0.17 (0.10)†
Program Release	0.70 (0.07)***	0.64 (0.07)***	0.69 (0.08)***
Discharge	-0.40 (0.21)†	-0.60 (0.23)**	-0.50 (0.24)*
Constant	6.56 (0.05)***	1.92 (0.05)***	9.29 (0.06)***
N	2,233	2,104	2,243
<i>Z</i> _(completer-dropout)	5.532***	3.769***	5.851***

Unstandardized coefficients are presented with standard errors in parentheses.

***p < .001, **p < .01, *p < .05, †p < .10

Table 6 also shows that post-release supervision type has an impact on these employment outcomes as well. Those on ISR worked more hours and earned a greater amount of total wages than those on standard supervision. Similarly, those released to community programs such as work

⁶ This was calculated by exponentiating the coefficient, subtracting 1, and multiplying by 100.

release or CIP worked more hours, had higher hourly wages, and earned higher total wages. The results for those who were discharged with no community supervision were inconsistent; the relationship was null in most models, but some models revealed poorer outcomes with fewer hours worked and lower wages than those on standard supervised release.

Conclusion

The initial evaluation of the EMPLOY program – which examined program participants who were released between July 2006 and December 2008 – found that those who entered the program were more likely to gain employment after release, worked more hours and earned more total wages, and were less likely to recidivate (Duwe, 2015). This study conducted a follow-up evaluation to determine whether the program had long-term effects on recidivism and post-release employment. The results suggest that EMPLOY has continued to be an effective employment program for those exiting prison. Those who participated in or completed EMPLOY were not only better able to find employment, but they were also able to secure higher-paying jobs, worked more hours, and earned more total wages. The program's success in increasing hourly wages are especially important, as scholars have emphasized the need for formerly-incarcerated people to find high-quality jobs that can translate into longer careers (Bucklen & Zajac, 2009; Huiras, Uggen, & McMorris, 2000; Lageson & Uggen, 2013; Niebuhr & Orrick, 2020; Uggen, 1999; Uggen & Staff, 2001).

The results also showed that EMPLOY lowered the risk of recidivism – both for measures of reoffending and for supervised release revocation – possibly by helping participants find high-quality employment. This supports the existing literature on the importance of employment as one of many barriers to successful reentry that formerly-incarcerated people can face (Berg & Huebner, 2010; Horney et al., 1995; La Vigne et al., 2004; Skardhamar & Telle, 2012; Uggen, 2000; Verweij

et al., 2021; Visser & Courtney, 2007; Visser et al., 2011). Employment can reduce recidivism in several ways: by reducing economic need, by providing informal social control through stakes in conformity and involvement in prosocial activities, and by increasing associations with prosocial peers and allowing for the transmission of prosocial values.

While there is a great deal of research emphasizing the connection between employment and desistance, some evaluations have not found support for reentry programs focusing on employment (e.g., Cook et al., 2015; Mackenzie, 2012; Muhlhausen, 2015; Northcutt Bohmert & Duwe, 2012; Visser et al., 2005; Visser et al., 2006; Wilson et al., 2000). There are several features unique to EMPLOY that likely led to successful outcomes. First, the success of EMPLOY may be partly due to its adherence to the continuum of care principle (Miller & Miller, 2010; Ndrecka, 2014; Pullman et al., 2006), as it provides employment assistance to participants both while they are incarcerated and during the first year after their release from prison. Second, rather than simply attempt to impart vocational skills and knowledge about the job market, EMPLOY actively attempts to build relationships with community employers in order to match participants with available jobs (see MINNCOR, n.d.). Finally, the program addresses common practical barriers to employment by assisting participants in obtaining interview-appropriate clothing, supplies needed for work, and transportation.

In addition, this study suggests post-release supervision can influence employment. Unsurprisingly, those released to community programs (which included work release) had far better employment outcomes than those released to standard supervision. Additionally, ISR was related to increases in finding employment, hours worked, and total wages, although it was not related to hourly wage. This finding is consistent with recent research showing intensive supervision decreases reoffending (Duwe & McNeeley, 2021). The relationship between ISR and

these outcomes could be explained by the fact that ISR participants in Minnesota are required to engage in 40 hours of “constructive” activities per week, which can include work but can also include education, training, or treatment – all of which might improve employment outcomes in the long run. In addition, the results showed that those released from prison with no community supervision were less successful in obtaining employment.

As with all research, there are limitations of the study that must be considered when interpreting the findings. First is the inability to control for pre-incarceration employment. It is possible that EMPLOY participants may have had more extensive pre-prison work histories than those in the comparison group, which could explain their increased success after release. The study attempted to account for this by using the education/employment domain score from the most recent LSI-R assessment during propensity score matching, but it is possible that there were still unobserved differences between the treatment and comparison groups. Second, the study was limited by the relatively small number of eligible non-participants that were available for matching ($n = 1,735$). Because of this, matches could not be obtained for all 2,636 EMPLOY participants and the results are based on a smaller group of 1,407 program participants and their matches. Still, as discussed above, the propensity score analysis resulted in a matched sample in which the treatment and control group were balanced on a number of theoretically relevant characteristics. However, it is important to note that matching was only conducted for the full group of EMPLOY participants; the stronger results found for program completers could be partially spurious due to differences between those who completed the program and those who did not participate (see Appendix A).

Third, both the recidivism and employment measures were obtained from official sources. Therefore, they may undercount reoffending by missing offenses that were not known to the

criminal justice system or that did not occur in Minnesota, or undercount post-release employment by missing jobs paid “under the table” or work performed outside of Minnesota. Fourth, the study was not able to account for dosage, or the extent to which participants utilized pre-release and post-release counseling or support. Finally, the study did not account for effects of the COVID-19 pandemic on employment or recidivism. While the individuals examined here were released prior to 2020, changes to criminal justice practices and the labor market during the pandemic (e.g., Forsythe et al., 2020; Viglione et al., 2020) may have affected post-release employment and recidivism (especially reincarceration and supervised release revocation) toward the end of some individuals’ follow-up periods. Future research should examine the extent to which the pandemic influenced recidivism and employment among those released from prison.

Despite these limitations, the results confirm the effectiveness of the EMPLOY program at improving employment and recidivism outcomes among those released from prison. The findings of this study and the prior literature provide insights for successful implementation of employment assistance reentry programs. First, it has been noted that traditional education and vocational programs may not address all factors that affect employment, such as attitudes toward mainstream work and other antisocial attitudes (Duwe & Clark, 2017a; Varghese, 2013; Varghese et al., 2020). While the EMPLOY program was successful without specifically targeting these factors, it is possible employment-focused programs that include aspects of cognitive-behavioral treatment to address these issues may be even more effective. In addition, recent literature has indicated that the difficulties formerly-incarcerated people face in obtaining and maintaining employment is compounded by reincarceration for supervised release revocations (Silver et al., 2021). Because of this and other concerns about lack of treatment for individuals incarcerated for short periods after violating conditions of supervised release (Duwe & Clark, 2017b; Duwe &

McNeeley, 2021), correctional agencies should pursue alternatives to reincarceration for technical violations of supervised release.

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Appendix A: Characteristics of EMPLOY Participants, by Program Outcome

	All participants	Completed	Dropped out	
	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>t</i>
Age	37.37	37.56	37.25	0.833
LSI-R	27.47	26.54	28.03	-4.330***
LSI-R education/employment	5.23	5.08	5.32	-2.187*
Prior convictions	1.53	1.43	1.58	-1.440
Prior supervision failures	1.08	0.81	1.25	-6.764***
Length of stay	39.98	45.29	36.71	5.340***
Visitation	1.13	1.24	1.06	1.778†
Discipline	4.73	3.40	5.55	-5.435***
Release year	2013.77	2014.32	2013.44	8.370***
	%	%	%	χ^2
Minority	51%	44%	53%	20.914***
Female	14%	15%	13%	2.004
Person offense	32%	32%	32%	0.000
Sex offense	12%	14%	11%	5.193*
Property offense	14%	14%	14%	0.011
Drug offense	23%	23%	24%	0.225
DWI offense	7%	7%	7%	0.380
Other offense	12%	10%	13%	4.257*
Metro	58%	57%	59%	0.666
New commitment	80%	85%	77%	26.842***
HS/GED	90%	94%	94%	0.004
CD treatment	29%	36%	25%	38.351***
SO treatment	4%	6%	3%	17.477***
Standard Release	54%	44%	60%	67.155***
Program Release	21%	30%	16%	70.731***
ISR	16%	14%	18%	7.028**
Discharge	9%	13%	6%	33.227***

***p < .001, ** p < .01, * p < .05, †p < .10